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The Impact of Depression on Treatment Outcomes for Patients with Aphasia who Participate in
an Intensive Comprehensive Aphasia Program (ICAP)

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Abstract

Background: Aphasia is a multi-modal impairment resulting from left-hemisphere stroke.

Aphasia is often accompanied by post-stroke depression. Acquiring aphasia and depression is seen to hinder quality of life and rehabilitative outcomes. Traditional stroke therapy often does not monitor or treat psychological difficulties such as depression. Such psychological difficulties hinder progress in recovery and may need to be addressed in therapy to ensure the best possible outcomes.

Aims: In response to the lack of psychological support for persons with aphasia, this literature review aims to explore the impact of depression on functional outcomes. Furthermore, this literature review will explore how such adverse effects can be lessened in an emerging therapy model, the intensive comprehensive aphasia program (ICAP).

Main Contribution: Post stroke risk of depression is higher in those with aphasia than those without. The ideal therapy model treats the patient as a whole and involves caregivers, social support, and collaborative care, in addition to treating the impairment.

Conclusions: Neglecting to treat depression in persons with aphasia (PWA) may slow recovery rates and hinder patient outcomes. Functional disabilities, such as depression, impact treatment outcomes and overall quality of life. The ICAP model encompasses the practice of treating the patient as a whole which may result in improved outcomes, both in rehabilitation and in PWA's quality of life. Further research is needed to determine the effectiveness of ICAPs. In addition, collaborative care with mental health professionals to offer psychological support for PWA in ICAPs should be further explored.

Keywords: aphasia, depression, stroke, rehabilitation

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Introduction

Approximately half of stroke survivors experience post-stroke psychological difficulties, such as depression (Døli, Helland, & Helland, 2017). Researchers report that the risk of depression in stroke survivors is 50% higher in those with aphasia than those without (Mitchell et al, 2017). Depression in stroke survivors with aphasia is of concern because it negatively effects quality of life (Mitchell et al., 2017), which in turn, may hinder progress in rehabilitation. For this reason, researchers suggested concern regarding the lack of psychological support during traditional stroke rehabilitation (Døli et al., 2017). This literature review aims to explore the impact of depression on impairment-based and participation-based outcomes in stroke survivors with aphasia. Furthermore, this literature review will explore how such negative effects can be reduced during an intensive comprehensive aphasia program (ICAP).

Depression and Aphasia

Many studies show a significant relationship between depression and aphasia, revealing that the prevalence of depression is higher in stroke survivors with aphasia than stroke survivors without aphasia (Døli et al., 2017; Mitchell et al., 2017; Shehata, Mistikawi, Risha, & Hassan, 2015). Shehata et al. (2015) conducted a quasi-experimental study on-personality and mood, specifically depression, in 30 stroke survivors with aphasia and 31 stroke survivors without aphasia. At one-month post stroke, the researchers administered the *Beck Depression Inventory* (Beck, Steer, & Brown, 1996) and found statistically significant evidence that persons with aphasia (PWA) are more likely to experience depression than stroke survivors without aphasia (Shehata et al., 2015). The researchers' comparison of demographic data between stroke

survivors with aphasia and stroke survivors without aphasia determined no statistical significance (p value less than or equal to 0.05) (Shehata et al., 2015), suggesting that participants were well-matched and further validating the findings that PWA are more likely to experience depression, than stroke survivors without aphasia.

Similarly, Døli et al. (2017) conducted a quasi-experimental study in 111 stroke survivors. 94 participants were assigned to the control (no diagnosis of aphasia) and 18 participants were assigned to the experimental group (diagnosis of aphasia). The researchers found that their participants did not have clinical depression; however, PWA were more likely to exhibit symptoms of depression than stroke survivors without aphasia. While participants did not score high enough to be diagnosed with clinical depression according to the *Hospital Anxiety and Depression Scale* (HADS) (Snaith & Zigmond, 1983), the aphasia group had higher mean scores than the non-aphasia group, indicating PWA reported more symptoms of depression. Participants were asked to self-report symptoms of depression at one-year post stroke using the HADS. Although, participants' scores did not determine the presence of clinical depression, researchers found a positive correlation between the severity of aphasia and depression.

Mitchell et al. (2017) conducted a meta-analysis to investigate the prevalence and predictors of mood disorders, including depression, in stroke survivors. These researchers found the risk of depression was higher following left (dominant) hemisphere stroke, aphasia, and among people with a family history and past history of mood disorders. The risk of depression is 50% higher for stroke survivors with aphasia versus those without. Despite such evidence, the significance of depression in PWA is not widely acknowledged during rehabilitation.

All three of these studies provide evidence that the post-stroke risk of depression is higher in those with aphasia than those without (Døli et al., 2017; Mitchell et al., 2017; Shehata

et al., 2015). Aphasia is often thought of as simply a language impairment; however, evidence suggests otherwise. In addition to a language impairment, aphasia can result in a higher incidence of psychological difficulties (Baker, et al., 2017; Døli et al., 2017; Shehata, et al., 2015), most commonly, depression (Baker, et al., 2017).

Aphasia rehabilitation that targets psychosocial well-being. Due to the high prevalence of post-stroke depression, gaining a better understanding of its impact on impairment and participation-based outcomes is necessary to improve aphasia rehabilitation and patients' quality of life. Functional disabilities, such as post-stroke depression, may be neglected in treatment (Baker et al., 2018; Hilari, Cruice, Sorin-Peters, & Worrall, 2016; Døli et al., 2017; Robinson et al., 1999). Neglecting to treat depression in PWA may slow recovery rates and hinder patient outcomes. These functional disabilities impact treatment outcomes and overall quality of life (Aron et al., 2015; Shi et al., 2016; Tu, Wang, Wen, Xu, & Wang, 2018).

Depression hinders quality of life and rehabilitation outcomes. Depression is a common complication of stroke with serious side effects, which if left untreated, may hinder stroke survivors' quality of life (Aron et al., 2015; Shi et al., 2016; Tu et al., 2018). To gain insight into who is most at risk, screening for depression before treatment begins is necessary. Screening for depression pre-treatment allows therapists to tailor therapy to each individual, maximizing rehabilitative outcomes. For example, Aron, Staff, Fortunato, & McCullough (2015), found that depression is significantly higher in female stroke survivors than male stroke survivors. After controlling for initial stroke severity, Shi et al. (2016) found that post-stroke depression is independently correlated with disability and poor quality of life at 1-year post stroke. The researchers also found PWA with depression were less likely to regain their pre-stroke health status, compared to their non-depressed counterparts (Aron et al., 2015; Shi et al.,

2016). Patients who showed fewer symptoms of depression within one year of stroke had less adverse impacts of post-stroke depression on functional outcomes and quality of life (Shi et al., 2016). PSD is associated with poorer recovery rates. When left untreated, PSD may result in lasting effects and decreased quality of life. When properly treated, the effects of PSD may be decreased or even eliminated. Therefore, screening for and treating psychological difficulties, such as depression, is necessary to maximize patient quality of life and rehabilitative outcomes following stroke.

The importance of caregiver support. Aphasia is likely to cause psychosocial distress for both stroke survivors and their relatives (Døli et al., 2017). The resulting language barriers make it difficult for PWA and their relatives to effectively communicate. Such sudden, drastic changes may leave families feelings helpless and disconnected. Several researchers have suggested the need for further research and changes that examine the effects of enhanced social support on PSD, physical, and cognitive recovery (Hilari et al., 2016; Robinson, Murata, & Shimoda, 1999). Yet, traditional stroke therapy often neglects to involve and support caregivers. Caregivers should be involved in the stroke rehabilitation process, both offering support to their relative with aphasia, and, gaining support from other caregivers and trained mental health professionals. Involvement of caregivers may positively impact depression and recovery rates in PWA. Robinson et al. (1999) found that depression and the absence of social support and encouragement results in decreased motivation and participation in rehabilitation. More specifically, the researchers found that impaired relationships between stroke survivors and their significant others was associated with impaired recovery in activities of daily living and cognitive recovery up to two years later (Robinson et al., 1999). Impaired relationships between PWA and their significant others can hinder rehabilitation and have lasting effects on recovery.

To maximize progress in rehabilitation, caregivers should be actively involved in the rehabilitation program.

The importance of social support. In addition to caregiver support, PWA may benefit from structured social outings and group therapy (Hilari et al., 2016, Elman & Bernstein-Ellis, 1999; Robinson et al., 1999). The integration of social activities into stroke rehabilitation is particularly relevant for stroke survivors without a significant other and/or caregiver. Social isolation can increase the incidence of stroke, impair recovery, and act as a risk factor for reoccurring stroke (Aron et al., 2015). Aphasia may result in communication barriers that prevent PWA from participating in their pre-stroke social activities (e.g., work, religious activities, book clubs). Group therapy increases conversational confidence (Elman & Bernstein-Ellis, 1999). Stroke rehabilitation can make up for lost social networks by facilitating structured, engaging outings and group sessions; decreasing the incidence of social isolation and furthermore, reducing symptoms of depression in PWA. To improve quality of life in PWA, therapy should promote emotional well-being, facilitate social activities to strengthen social networks and participation, in addition to treating the language impairment (Hilari et al., 2016). Social support during rehabilitation is likely to reduce symptoms of PSD in PWA and may improve rehabilitative outcomes.

Treating the patient as a whole. Therapy that treats the patient as a whole is likely to improve psychosocial well-being and the language impairment (Baker et al., 2018; Robinson et al., 1999). According to the World Health Organization (WHO), “health” is the holistic functioning of a client, including physical, mental, and social aspects, not just the absence of disease (“International Functioning of Communication,” n.d.). The WHO’s International Classification of Functioning, Disability, and Health (ICF) model (WHO-ICF) framework

recommends treating all aspects of patient well-being, including the patient's activity and participation, in order to provide the best treatment and outcomes. The same holistic care should be implemented when treating persons with aphasia.

Baker et al. (2018) conducted a study in which PWA were asked what they wanted and/or found most helpful in stroke rehabilitation. PWA ranked the following as highly valuable: communication support from staff members during rehabilitation, individually tailored therapy to manage symptoms of depression, involvement of family, friends, and stroke peers, and access to psychological support. Patients reported that these factors were most valuable for decreasing depression and low mood post stroke. Robinson et al. (1999) also stressed the importance of social support post stroke, finding a significant association of the relationship with closest other ($p = .048$), spiritual beliefs ($p = .049$), and social activities ($p = .027$) and depression at one to two years post stroke. These findings indicate a need for well-rounded therapy that treats the patient as a whole. Holistic, personalized care is likely to increase communication and participation between caregivers and PWA during therapy, moreover improving recovery outcomes.

Intensive comprehensive aphasia programs. In response to the need for a holistic, more effective stroke rehabilitation model, researchers have begun to explore targeting multiple domains simultaneously (Rose, Cherney, & Worrall, 2013). One such model, is the Intensive Comprehensive Aphasia Program (ICAP). An ICAP is a stroke rehabilitation model that provides a minimum of three hours of daily treatment for at least two weeks, utilizes both individual and group therapy, treats activity and participation levels of language and communication functioning in addition to the impairment, provides patient and/or family education, and has a cohort who enter and exit the program on the same, definable dates. ICAPs

apply the principles of neuroplasticity (e.g., repetition and intensity), emphasize individualized treatment and evidence-based practice, and are primarily associated with university programs. ICAPs that are affiliated with university's may be more cost effective by use of graduate students, although, most ICAPs are still self-pay. The cost of ICAPs may have an effect on who participates. Further research on the cost-effectiveness of ICAPs is needed.

The goal of ICAP is to treat the deficit, maximizing communication potential, while providing psychosocial support and enhancing participants quality of life (Persad, Wozniak, & Kostopoulos, 2015). Unlike ICAPs, traditional stroke therapy (e.g., constraint-induced language therapy) requires PWA to perform massed daily practice of the same treatment, neglecting patient well-being outside of the language impairment. ICAPs provide comprehensive treatment across multiple language contexts and communicative environments (Persad et al., 2015; Rose et al., 2013) and follow the WHO-ICF model of holistic care. Although, not all ICAP participants make significant gains, the majority demonstrate significant improvements, both early post onset and in the chronic phases of stroke recovery (Persad et al., 2015). ICAP is a comprehensive treatment model for aphasia rehabilitation. ICAP outcomes demonstrate overall improvements in participants' quality of life by treating the deficit and psychosocial measures.

ICAPs treat impaired social relationships in PWA, which may improve overall rehabilitative outcomes (Persad et al., 2015). PWA ranked the involvement of family, friends, and stroke peers as highly valuable (Baker et al., 2018). ICAPs meet this need by involving family members and facilitating group therapy with stroke peers. Caregiver education is present in many ICAPs, which may allow caregivers to have better insights and more realistic expectations of their family members with aphasia (Persad et al., 2015). Caregiver education may help facilitate positive relationships between caregivers and PWA, which may improve

recovery outcomes (Robinson et al., 1999). In addition, social support lessens the instance of PSD and increases motivation for PWA in rehabilitation (Aron et al., 2015; Robinson et al., 1999). ICAPs facilitate healthy interaction with family, friends, and peers, providing support for the best possible outcomes.

Collaborative care may be beneficial in providing holistic care and producing the best patient outcomes possible (Baker et al., 2018; Robinson et al., 1999). In an international ICAP survey, Rose et al. (2013) reported that few ICAPs were using collaborative care. Those who were using collaborative care were collaborating with physical therapists and music therapists. However, no participants reported the use of collaborative care with mental health professionals. Baker et al. (2017) reported that collaborative care is necessary to ‘bridge the gap’ between treating the impairment and psychosocial well-being. The collaboration of mental health specialists and stroke health professionals allows clients to receive intensive rehabilitation services while managing and treating psychological measures, such as PSD. Collaborative care ensures holistic treatment for PWA and their families, which may improve rehabilitative outcomes. Hoover, Caplan, Waters, & Carney (2017) found PWA who were treated in an interprofessional ICAP displayed evidence of improved linguistic and quality of life changes. This evidence was consistent with comments from PWA and their significant others following the program. All participants felt the interprofessional ICAP improved both functional communication and quality of life for PWA. Given such results, further research on the effectiveness of collaborative care in ICAPs is needed. Although, it appears that interprofessional ICAPs produce positive patient outcomes.

Conclusions and Future Directions

The instance of post-stroke depression (PSD) is higher in stroke survivors with aphasia than stroke survivors without. The prevalence of PSD in persons with aphasia (PWA) is

significant and hinders quality of life and rehabilitative outcomes. As a result, it may be beneficial to address psychosocial measures in rehabilitation. Therapy that treats the patient as a whole is likely to provide the best functional outcomes. ICAPs are increasing in number and often provide significant changes for participants in both communication skills and psychosocial well-being (Rose et al., 2013). Further research is needed to determine the effectiveness of ICAP. Given the concern regarding the lack of psychological support following stroke (Døli et al., 2017), it is surprising that more ICAPs do not collaborate with mental health professionals. More ICAPs may want to practice collaborative care with mental health professionals to ensure treatment of the patient as a whole, further improving rehabilitative outcomes. With further collaboration, the effectiveness of psychosocial support in lessening the adverse effects of PSD in PWA can be explored.

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